

WHAT IS CLAIMED IS

1. A power saving apparatus for a half bridge power supply, comprising:

a switch-apparatus, connected in series with a start-up resistor, wherein said switch-apparatus is turned off to disconnect said start-up resistor from a standby power terminal when the power supply operates under standby-mode; and

a balance-apparatus, connected in parallel with a high-side capacitor and a low-side capacitor, wherein said balance-apparatus will sink a current from either said high-side capacitor or said low-side capacitor to balance a differential voltage between said high-side capacitor and said low-side capacitor, wherein a negative terminal of said high-side capacitor is connected with a positive terminal of said low-side capacitor.

2. The power saving apparatus as claimed in claim 1, wherein said switch-apparatus comprises:

a switch connected in series with said start-up resistor; and

an inverter connected to said switch, wherein an input of said inverter is driven by a control signal, wherein an output of said inverter controls said switch, and wherein said switch is turned off by said control signal via said inverter when the power supply operates in standby mode.

3. The power saving apparatus as claimed in claim 1, wherein said balance-apparatus comprises:

a resistor network connected in between a positive terminal of said high-side capacitor and a negative terminal of said low-side capacitor;

an N-current-sink connected in parallel with said high-side capacitor; and

a P-current-sink connected in parallel with said low-side capacitor.

4. The power saving apparatus as claimed in claim 3, wherein said resistor

network comprises:

- a high-side resistor;

- a threshold resistor; and

- a low-side resistor connected in series with said high-side resistor via said threshold resistor, wherein the resistance of said high-side resistor is equal to the resistance of said low-side resistor.

5. The power saving apparatus as claimed in claim 3, wherein said N-current sink comprises:

- an N-resistor;

- an N-limit resistor; and

- an n-p-n transistor, wherein a collector of said n-p-n transistor is connected to said positive terminal of said high-side capacitor via said N-limit resistor, wherein an emitter of said n-p-n transistor is connected to said negative terminal of said high-side capacitor via said N-resistor, and wherein a base of said n-p-n transistor is connected to the junction of said low-side resistor and said threshold resistor.

6. The power saving apparatus as claimed in claim 3, wherein said P-current sink comprises:

- a P-resistor;

- a P-limit resistor; and

- a p-n-p transistor, wherein a collector of said p-n-p transistor is connected to said negative terminal of said low-side capacitor via said P-limit resistor, wherein an emitter of said p-n-p transistor is connected to said positive terminal of said low-side capacitor via said P-resistor, and wherein a base of said p-n-p transistor is connected to the junction of said threshold resistor and said high-side resistor.